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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,048	07/24/2006	Takahisa Muramoto	28955.1071	3180
27890	7590	05/27/2009		
STEPTOE & JOHNSON LLP 1330 CONNECTICUT AVENUE, N.W. WASHINGTON, DC 20036			EXAMINER CHRISTIAN, MARJORIE ELLEN	
			ART UNIT 1797	PAPER NUMBER
			MAIL DATE 05/27/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/587,048

**Applicant(s)**

MURAMOTO ET AL.

**Examiner**

MARJORIE CHRISTIAN

**Art Unit**

1797

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 15-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 13-14 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Summary*

1. This is the initial Office action based on the application filed July 24<sup>th</sup>, 2006.
2. Claims 1-18 are pending, Claims 13-14 have been withdrawn from consideration and Claims 1-12, 15-18 have been fully considered.

### *Election/Restrictions*

3. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group 1, claims 1-12, 15-18, drawn to a method for treating water comprising adding an adsorbent to water and separating a permeated liquid through a filter membrane.

Group 2, claims 13-14, drawn to an apparatus for treating water comprising adsorbent adding section, membrane filtering treatment section and chemical decomposition treatment section.

The inventions listed as Groups I and II do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features. Specifically, JP 2003-266090, KURONUMA (hereinafter KURONUMA) discloses a similar special technical feature. The special feature disclosed as an apparatus (Fig. 1) with an adsorbent adding section (13), membrane filtering treatment section (14) and chemical decomposition treatment

section (15) and method for treating water by adding adsorbent to water and separating a permeated liquid through a filter membrane (Pg. 8, Para. 16).

During a telephone conversation with Ms. Houda Morad on 5/21/2009 a provisional election was made with traverse to prosecute the invention of Group 1, claims 1-12, 15-18. Affirmation of this election must be made by applicant in replying to this Office action. Claims 13-14 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Priority***

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

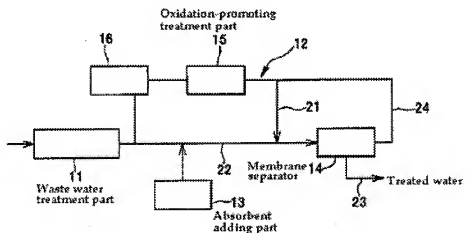
***Claim Rejections - 35 USC § 112***

5. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 12 recites the limitation "in said step A". There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

6. Claims 1, 5-6, 8-10, 12, 15, 18 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2003-266090, KURONUMA et al. (hereinafter KURONUMA).

As to Claims 1, 15, KURONUMA discloses a method for treating hardly-decomposable-substance-containing water (Pg. 3, Para. 1, Fig. 1), comprising the steps of adding an adsorbent to raw treatment water causing a hardly decomposable substance to be adsorbed on the adsorbent (Claim 2), separating a permeated liquid through a filter membrane to concentrate the adsorbent adsorbing the hardly decomposable substance (Claims 1-2), and chemically decomposing the hardly decomposable substance adsorbed on the concentrated adsorbent with peroxide where it is inherent that there is no desorption from the adsorbent, absent evidence to the contrary, (Claim 2, Pg. 9, Para. 18).



As to Claims 5, 18, KURONUMA discloses carrying out irradiation with ultraviolet light to decompose the hardly decomposable substance (Pg. 9, Para. 18).

As to Claim 6, KURONUMA discloses backwashing the filter membrane to free the adsorbent adsorbing the hardly decomposable substance from the filter membrane (Pg. 8, Para. 17, Fig. 2).

As to Claims 8-9, KURONUMA discloses the adsorbent to be added is titanium dioxide (Pg. 7, Para. 14).

As to Claim 10, KURONUMA discloses the membrane is an ultrafilter membrane (Claim 4).

As to Claim 12, KURONUMA discloses part of the hardly decomposable substance concentrated in said step (C) is returned upstream of step (C) (See Fig. 1 line from 16 that connects after 11, Pg. 7, Para. 14).

#### ***Claim Rejections - 35 USC § 103***

7. **Claim 2 is rejected under 35 USC 103 (a) as being obvious over JP 2003-266090, KURONUMA et al. (hereinafter KURONUMA).**

As to Claim 2, KURONUMA discloses that the amount of peroxide used is optimized to consider both cost and the amount of peroxide needed to remove harmful constituents (Pg. 9, Para. 18), where it would be obvious to a person having ordinary skill in the art to optimize the concentration of peroxide relative to the amount of hardly decomposable substance [*result effective variable*] as KURONUMA recognizes the concentration relative to the hardly decomposable substance as a result effective variable and it has been held that it is not inventive to discover the optimum ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

8. **Claims 3, 16 are rejected under 35 USC 103 (a) as being obvious over JP 2003-266090, KURONUMA et al. (hereinafter KURONUMA) in view of US PGPub 2003/0173282, YAMANAKA et al. (hereinafter YAMANAKA).**

As to Claims 3, 16, KURONUMA discloses that method of treating the hardly decomposable substance as shown in the 102(b) rejection of Claims 1, 15 and in Fig. 1. KURONUMA does not appear to expressly disclose separating the permeated liquid water containing the contaminant prior to adding an adsorbent. However, it is well known in the art to remove permeated liquid from the contaminated water as shown by YAMANAKA. YAMANAKA discloses a water treatment method (Fig. 1) that separates a permeated liquid from water containing the hardly decomposable substance through a reverse osmosis membrane (21) to concentrate the hardly decomposable substance (Pg. 5, Para. 34).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to include the separating step to concentrate contaminated water of YAMANAKA in the method of treating wastewater of KURONUMA. The motivation would have been to improve the efficiency of the adsorption step by providing a simple economy of resources by removing excess uncontaminated water from the treatment steps. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

9. **Claims 4, 11 are rejected under 35 USC 103 (a) as being obvious over JP 2003-266090, KURONUMA et al. (hereinafter KURONUMA) in view of US Patent No. 5,571,419, OBATA et al. (hereinafter OBATA).**

As to Claim 4, KURONUMA discloses the method of treating wastewater as shown above in the 102(b) rejection of Claim 1 but does not appear to expressly disclose neutralizing chlorine in the water. However, it is well known to remove free chlorine from raw water prior to treatment as shown by OBATA. OBATA discloses a waste water treatment apparatus and method (Abstract) where reducing agent is injected into raw water so as to remove chlorine prior to treatment (Fig. 2, C6/L31-49). The motivation to include chlorine neutralization in the method of treating contaminated water would have been to improve recovery of pure water by avoiding the contamination in later process steps caused by the presence of free chlorine. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

As to Claim 11, KURONUMA discloses using peroxide as the adsorbent but does not appear to expressly disclose that the peroxide used is a persulfate. However, OBATA discloses using persulfates as an oxidizer in wastewater treatment (C4/L28-31), the motivation would have been to use a well known oxidizer to decompose urea and other TOC components.



10. **Claim 7 is rejected under 35 USC 103 (a) as being obvious over JP 2003-266090, KURONUMA et al. (hereinafter KURONUMA) in view of US Patent No. 6,652,758, KRULIK et al. (hereinafter KRULIK).**

As to Claim 7, KURONUMA discloses that the method of treating wastewater including having wastewater containing adsorbent (oxidizer) as shown in the 102(b) rejection of Claim 1. KURONUMA does not appear to expressly disclose addition of a flocculating agent. However, KRULIK discloses adding a flocculating agent (Fig. 1, Ref. 120) to water containing the adsorbent (112), to flocculate and separate the adsorbent adsorbing the hardly decomposable substance. At the time of the invention it would have been obvious to a person having ordinary skill in the art to add the flocculating agent of KRULIK to the wastewater containing an adsorbent the motivation would have been to help reduce and separate the concentration of harmful adsorbent components (ions) in the water (C4/L33-48). Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

11. **Claim 17 is rejected under 35 USC 103 (a) as being obvious over JP 2003-266090, KURONUMA et al. (hereinafter KURONUMA) in view of US PGPub 2003/0173282, YAMANAKA et al. (hereinafter YAMANAKA) and US Patent No. 4,332,685, NOWLIN et al. (hereinafter NOWLIN).**

As to Claim 17, YAMANAKA discloses the step of concentrating the waste water using a reverse osmosis membrane (as shown in the 103(a) rejection of Claim 16. YAMANAKA does not appear to expressly disclose that a portion of the water from step

(A) (reverse osmosis) is recycled back to the treatment raw matter. However, it is obvious and well known to recycle from a reverse osmosis step in waste water treatment as shown by NOWLIN. NOWLIN discloses recycling some of the water obtained in a reverse osmosis step back to the raw water (Fig. 1, C3/L37-57). The motivation would have to improve the recovery of water in the treatment process. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

### ***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARJORIE CHRISTIAN whose telephone number is (571)270-5544. The examiner can normally be reached on Monday through Thursday 7-5pm (Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Krishnan S Menon/  
Primary Examiner, Art Unit 1797

MC